

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| Applicant                  | Marc R. Amling, <i>et al.</i>  |
| Application No. 10/033,316 | Filing Date: December 28, 2001 |
| Title of Application:      | Intelligent Camera Head        |
| Confirmation No. 9649      | Art Unit: 2622                 |
| Examiner                   | Dillon Geszvain                |

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Appeal Brief Under 37 CFR §41.37**

Dear Sir:

A Notice of Appeal from the rejection of Claims 1-4, 8-11, 13-20, 23-26 and 28-41, all pending claims of U.S. Patent Application No. 10/033,316, is being filed herewith, Applicant accordingly files its Appeal Brief in connection with its appeal. A Claims Appendix is submitted herewith, as are Appendices related to evidence previously submitted and decisions related to the case.

**(i) Real Party In Interest**

The real party in interest is Karl Storz Imaging, Inc., of Goleta, CA , USA assignee of the present patent application.

**(ii) Related Appeals and Interferences**

There are no related appeals, interferences or judicial proceedings known to Appellant, the Appellant's legal representative, or Assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(iii) Status Of Claims**

Claims 1-4, 8-11, 13-20, 23-26 and 28-41, all pending claims of the present application, stand rejected and are the subject of the instant Appeal. A copy of each of these claims is attached hereto in the Claims Appendix.

**(iv) Status Of Amendments**

There are no pending or unentered Amendments. On April 5, 2007, Appellant filed a Response to the Office Action dated February 8, 2007. Applicant made amendments to the claims in the Response to the Office Action dated February 8, 2007, which were acknowledged, entered and addressed in the Office Action dated May 3, 2007, from which Appellant now appeals.

**(v) Summary Of Claimed Subject Matter**

Claims 1, 15, 25 and 34 are independent claims pending in this case.

Independent Claim 1

Claim 1 is directed toward a video imaging system having a camera control unit processing a continuous stream of digital video data (p. 4, par. 13; p. 7, pars. 20-1; p. 11, pars. 36-7; p. 13, pars. 40-1; FIGS. 1-7), and a cable, connected to the camera control unit, for transmitting the stream of digital video data to the camera control unit (p. 4, par. 13; p. 5, par. 17; p. 6, par. 18-20; p. 11, par. 36; p. 12, pars. 38-9; p. 14, par. 42; FIGS. 1-7). Claim 1 further includes a camera head, connected to the cable, for providing the stream of digital video data (p. 4, par. 13; p. 5, pars. 14-16; p. 7, par. 21, p. 8, par. 30; FIGS. 1-7). The camera head of claim 1 includes an imager, for generating an analog stream of video data (p. 4, par. 13; p. 5, pars. 14-16; p. 8, par. 30; p. 9, par. 31; p. 10, par. 33-5; p. 11, par. 36; p. 13, par. 40; FIGS. 1-7), and a timing generator, generating a timing signal particular to the camera head, the timing signal actuating the imager and sent to the camera control unit (p. 5, par. 13-14; p. 6, par. 19; p. 8, par. 30, p. 9, par. 31-2; FIGS. 1 & 2). The camera head of claim 1 also includes a converter, for converting the analog stream of video data into the stream of digital video data (p. 5, pars. 13 & 15; p. 9, par. 30; p. 10, par. 33; p. 11, pars. 36-7; p. 13, par. 40; FIGS. 1 & 3), a serializer, for serializing the stream of digital video data for transmission over the cable (p. 5, pars. 13 & 16; p. 9, par. 30; p. 10, par. 35; FIGS. 1 & 5), and at least one digital serial driver (p. 7, par. 21; p. 9, par. 30; p. 11, par. 37; p. 12, pars. 38-9; p. 14, pars. 41-3; p. 15, pars. 45-6; FIGS. 1, 6 & 7). Claim 1 further states that the camera control unit has at least one digital serial receiver and is controlled based at least in part upon the timing signal particular to the camera head (p. 7, par. 21; p. 12, pars. 38-9; p. 14, pars. 42-3; p. 15, pars. 45-6; FIGS. 1, 6 & 7).

Independent Claim 15

Claim 15 is directed toward a video imaging system having a camera control unit processing a continuous stream of digital video data (p. 4, par. 13; p. 7, pars. 20-1; p. 11, pars. 36-7; p. 13, pars. 40-1; FIGS. 1-7), and a cable, connected to the camera control unit, for transmitting the stream of digital video data to the camera control unit (p. 4, par. 13; p. 5, par. 17; p. 6, par. 18-20; p. 11, par. 36; p. 12, pars. 38-9; p. 14, par. 42; FIGS. 1-7). Claim 1 further includes a camera head, connected to the cable, for providing the stream of digital video data (p. 4, par. 13; p. 5, pars. 14-16; p. 7, par. 21, p. 8, par. 30; FIGS. 1-7). The camera head of claim 1 includes an imager, for generating the stream of digital video data (p. 4, par. 13; p. 5, pars. 14-16; p. 8, par. 30; p. 9, par. 31; p. 10, par. 33-5; p. 11, par. 36; p. 13, par. 40; FIGS. 1-7), and a timing generator, generating a timing signal particular to the camera head, the timing signal actuating the imager and sent to the camera control unit (p. 5, par. 13-14; p. 6, par. 19; p. 8, par. 30, p. 9, par. 31-2; FIGS. 1 & 2). The camera head of claim 1 also includes at least one digital serial driver (p. 7, par. 21; p. 9, par. 30; p. 11, par. 37; p. 12, pars. 38-9; p. 14, pars. 41-3; p. 15, pars. 45-6; FIGS. 1, 6 & 7). Claim 1 further states that the camera control unit has at least one digital serial receiver and is controlled based at least in part upon the timing signal particular to the camera head (p. 7, par. 21; p. 12, pars. 38-9; p. 14, pars. 42-3; p. 15, pars. 45-6; FIGS. 1, 6 & 7), and that a plurality of camera heads, each with differing timing signals, are attachable to and controlled by the camera control unit (p. 20, Ins. 20-3; FIGS. 1-7).

Independent Claim 25

Claim 25 is directed toward a video imaging system having a camera control unit processing a continuous stream of digital video data (p. 4, par. 13; p. 7, pars. 20-1; p. 11, pars. 36-7; p. 13, pars. 40-1; FIGS. 1-7), and a cable, connected to the camera control unit, for transmitting the stream of digital video data to the camera control unit (p. 4, par. 13; p. 5, par. 17; p. 6, par. 18-20; p. 11, par. 36; p. 12, pars. 38-9; p. 14, par. 42;

FIGS. 1-7). Claim 1 further includes a camera head, connected to the cable, for providing the stream of digital video data (p. 4, par. 13; p. 5, pars. 14-16; p. 7, par. 21, p. 8, par. 30; FIGS. 1-7). The camera head of claim 1 includes an imager, for generating an analog stream of video data (p. 4, par. 13; p. 5, pars. 14-16; p. 8, par. 30; p. 9, par. 31; p. 10, par. 33-5; p. 11, par. 36; p. 13, par. 40; FIGS. 1-7), a converter, for converting the analog stream of video data into the stream of digital video data (p. 5, pars. 13 & 15; p. 9, par. 30; p. 10, par. 33; p. 11, pars. 36-7; p. 13, par. 40; FIGS. 1 & 3), and a serializer, for serializing the stream of digital video data (p. 5, pars. 13 & 16; p. 9, par. 30; p. 10, par. 35; FIGS. 1 & 5).

#### Independent Claim 34

Claim 34 is directed toward a video imaging system having a camera control unit processing a continuous stream of digital video data (p. 4, par. 13; p. 7, pars. 20-1; p. 11, pars. 36-7; p. 13, pars. 40-1; FIGS. 1-7), and a cable, connected to the camera control unit, for transmitting the stream of digital video data to the camera control unit (p. 4, par. 13; p. 5, par. 17; p. 6, par. 18-20; p. 11, par. 36; p. 12, pars. 38-9; p. 14, par. 42; FIGS. 1-7). Claim 1 further includes a camera head, connected to the cable (p. 4, par. 13; p. 5, pars. 14-16; p. 8, par. 30; p. 9, par. 31; p. 10, par. 33-5; p. 11, par. 36; p. 13, par. 40; FIGS. 1-7), and an endoscope for providing the stream of digital video data (p. 1, pars. 2 & 3; p. 15, par. 44). The camera head of claim 1 includes an imager, including an analog to digital converter for generating the stream of digital video data (p. 5, pars. 13 & 15; p. 9, par. 30; p. 10, par. 33; p. 11, pars. 36-7; p. 13, par. 40; FIGS. 1 & 3), and a serializer, for serializing the stream of digital video data for continuous transmission over said cable (p. 5, pars. 13 & 16; p. 9, par. 30; p. 10, par. 35; FIGS. 1 & 5).

#### **(vi) Grounds Of Rejection To Be Reviewed On Appeal**

(1) Claims 1-3, 8-11, 13 and 14 stand rejected under 35 U.S.C. 103(a), as being unpatentable over Yokoyama (U.S. Patent No. 6,449,007) in view of Koide et al. (U.S.

Patent No. 6,870,566) and Takahashi et al. (U.S. Patent No. 6,753,901) and Chung et al. (U.S. Patent No. 6,836,290).

(A) Whether the Examiner's rejection under 35 U.S.C. 103(a) is proper despite the fact that Yokoyama teaches away from the modification the Examiner has suggested in view of Koide et al., Takahashi et al. and Chung et al.

(2) Claims 15, 16, 19, 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (U.S. Patent No. 6,046,769) in view of Koide et al. and Chung et al.

(A) Whether the Examiner's rejection under 35 U.S.C. 103(a) is proper despite the fact that Ikeda et al. teaches away from the modification the Examiner has suggested in view of Koide et al. and Chung et al.

(3) Claims 25 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama in view of Koide et al. and Takahashi et al.

(A) Whether the Examiner's rejection under 35 U.S.C. 103(a) is proper despite the fact that Yokoyama teaches away from the modification the Examiner has suggested in view of Koide et al. and Chung et al.

(4) Claims 34 and 36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al. in view of Takahashi et al. and Official Notice.

(A) Whether the Examiner's rejection under 35 U.S.C. 103(a) is proper despite the fact that the modified system of Koide et al. in view of the Official Notice would result in a system not usable for the purpose for which it was modified.

## **(vii) Argument**

### Claims 1 and 25

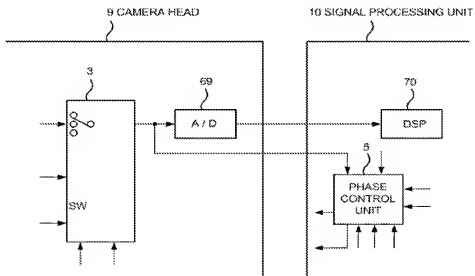
Claim 1 stands rejected under 35 U.S.C. 103(a), as being unpatentable over Yokoyama in view of Koide et al., Takahashi et al. and Chung et al. Claim 25 stands rejected under 35 U.S.C. 103(a), as being unpatentable over Yokoyama in view of Koide et al. and Takahashi et al. Claim 1 recites among other limitations, “a camera head . . . including: . . . a converter, for converting the analog stream of video data into the stream of digital video data.” Claim 25 requires among other limitations a “camera head including: . . . a converter, for converting the analog image signal into the digital image signal.”

The Examiner has submitted that Yokoyama does not “teach is the camera head includes an A/D converter in the camera head 9, instead the image signal is converted when it reaches the CCU 10 by A/D 69” but that “Koide et al. teaches a video imaging system . . . that converts the image signal from analog to digital before transmitting it from the camera head 11 to the camera control unit 12” and that “it would have been obvious . . . to have moved A/D 69 from the CCU 10 to the camera head 9 as the image signal would be converted to a digital signal before being transmitted and this would reduce the effects of noise on the image signal.” (Official Action 5/3/07, p. 5.) Accordingly, the Examiner has submitted that noise reduction is the overriding factor in Yokoyama and Koide et al. that that any modification that may potentially reduce noise would be “obvious.” Applicant notes, however, the Yokoyama never mentions noise reduction. Rather, Yokoyama identifies the following problem to be solved by the invention:

“Although the operability of these head-detachable camera is good, however, a cable for exchanging various kinds of signals, such as an image signal read from a CCD . . . a horizontal synchronizing (HD) signal, a vertical synchronizing (VD)

signal, and clock signal (CLK) for establishing synchronization, and other control signals, costs considerable. Further, when the signals CLK and HD, and the CCD signal are transmitted via different signal lines, if the lengths of the signal lines become slightly different from each other by changing the length of the cable, problems in which synchronization is not established and which color signals are reversed may arise because of signal delay in cable."

(Col. 1, Ins. 30-43; *See also*, Col. 2, Ins. 32-54.) To address the synchronization issue, Yokoyama teaches a system "having a camera head unit and a signal processing unit connected by a less number of signal lines by transmitting a clock signal, a horizontal synchronizing signal, and a CCD signal via a single signal line." (Col. 2, In. 66 – Col. 3, In. 2.) Therefore, to address the synchronization issue, Yokoyama teaches that the CCD signal, the HD signal and CLK signal need to be transmitted over a single line as illustrated in FIG. 1 of Yokoyama. For example, note that the CCD signal is fed out of AGC 63 into SW 3 as are the HD signal from SSG 4 and the CLK signal from TG 64. All of these signals are transmitted over a single line to A/D 69 and Phase Control Unit 5. If, however, the A/D converter 69 were relocated to camera head 9 as suggested by the Examiner, the following circuit would result:



As can be seen, the modification would result in two transmission lines rather than a single transmission line in contravention of the teachings of Yokoyama. MPEP 2143.01;



*In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984) (If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.) While an argument may be submitted that the HD and CLK signal should be transmitted through the A/D converter, this simply would not work as these signals would be unacceptably altered by the converter such that they would no longer be usable and therefore, not obvious. *Id.* Additionally, if the A/D converter were moved to a position further upstream of SW 3, then the circuit would at least have to be redesigned to include a switching device that could handle a different signal format and whether such a device exists or for that matter, existed ten years ago when Yokoyama was filed (or eleven years ago when Koide et al. was filed), is questionable at best. The whole thrust of Yokoyama was to provide a system that transmitted a CCD signal with the HD signal and CLK signal to achieve synchronization of the analog signal with these other signals. There simply is no motivation in Yokoyama to cast off the primary teaching of the reference so as to possibly provide some reduction the effects of noise on the image signal, especially in view of the fact that noise reduction appears to be addressed by the shielded cabling illustrated in FIG. 1. Applicant further notes that repositioning of A/D converter 69 into camera head 9 will have a tendency to increase the size and weight of camera head 9 as additional space will need to be provided to contain the additional components.

Accordingly, Appellant respectfully submits that modification of Yokoyama in view of Koide et al. can not be obvious as it works directly against the stated objects of the invention in Yokoyama and requires abandonment of the primary teaching of Yokoyama and as such neither claims 1 nor claim 25 can be obvious in view of the suggested combination. *In re Arkley*, 455 F.2d 586, 587-88, 172 U.S.P.Q. 524, 526 (C.C.P.A. 1972) (When considering a reference, the reference must be considered for its teachings as a whole and it is inappropriate to modify references without regard to what the references teach as a whole.)

Claim 1 further recites among other limitations, “a camera head . . . including: . . . a serializer, for serializing the stream of digital video data for transmission over said cable.” Claim 25 requires among other limitations a “camera head including: . . . a serializer, for serializing the digital image data.”

The Examiner has submitted that “Yokoyama does not teach that the camera head includes a serializer, however Takahashi et al. teaches an endoscopic imaging system where the video signal is passed through a serializer . . . [t]herefore it would have been obvious . . . to have included a serializer in the camera head of Yokoyama in view of Koide et al. as this would allow for the use of a minimum number of conductors for passing the signal from the camera head to the camera control unit and would thus allow for the cable to be made light weight and would also reduce the cost of producing the cable.” (Official Action 5/3/07, p. 5.)

The Examiner is essentially stating that it would be obvious to put still more equipment in camera head for transmission of the CCD signal. As stated above, to position the A/D converter in the camera head would require splitting of the signal line in contravention of the teachings of Yokoyama. While the Examiner has submitted that it would be obvious to further include a serializer for the transmission line, the Examiner does not identify to which line the serializer would attach to in the modified Yokoyama system (e.g. the image signal after the A/D converter or the HD and CLK signal line). In fact, such a modification completely disregards the teachings of Yokoyama which teaches that SW “switches among a CCD signal from the AGC 63, a horizontal synchronizing (HD) signal, and a clock signal (CLK) under control of the CPU 1.” (Col. 4, lns. 44-47.) To provide a serializer would require abandonment of this teaching of Yokoyama.

While the Examiner has submitted that a serializer would allow “for the use of a minimum number of conductors for passing the signal from the camera head to the camera control unit”, this isn’t the case as the HD and CLK can not be run through the

A/D converter and still function properly. In addition, while the Examiner has submitted that further adding equipment to the camera head would make the cable "light weight", this will require further increasing the size of the camera head and add to the overall weight and power consumption of the device. Accordingly, such a modification of Yokoyama with Koide et al. and Takahashi et al. can not be obvious as it works against the stated objects in Yokoyama and as such neither claims 1 nor claim 25 can be obvious in view of the suggested combination

Claim 1 further recites among other limitations, "a camera head . . . including: . . . at least one digital serial driver." The Examiner has also submitted that "[w]hat none of the above teaches is using digital serial drivers and receivers to transmit data from a camera head to a camera control unit" but that "Chung et al. teaches an imager utilizing at least one digital serial driver 54 and one digital serial receiver 56." (Official Action 5/3/07, p. 5) The Examiner concludes that "it would have been obvious . . . to have used the digital serial driver taught in Chung et al. to transmit signals in the system taught in Yokoyama in view of Koide et al. and Takahashi et al. as this is a low power system that allows for the use of differential signals that are resistant to EMI noise." (Official Action 5/3/07, pp. 5-6)

The Examiner is further stating that it would be "obvious" to add yet more equipment to the camera head in Yokoyama. However, the Examiner has not provided any explanation of how such a drastically modified system would function. For example, Yokoyama clearly teaches that the CCD signal is sent into SW 3 as are the HD and CLK signals and that the signals are transmitted over a single signal line. Moving the converter to the camera head, along with a serializer and a digital serial driver would not result in a system that allows for transmission over a single line. Rather, a system including two different signal lines would be created where one of the signal lines would include a serializer and digital serial driver. The Examiner has submitted that the overriding motivation to modify Yokoyama with Koide et al., Takahashi et al. and Chung et al. is to reduce signal noise. However, it is inappropriate to cast off the primary teaching

of a reference in favor of a motivation found, not in Yokoyama, but found in Appellant's disclosure.

Appellant further submits that this additional modification of Yokoyama will require still additional space in the camera head, and increase the weight and power consumption of the device.

Accordingly, because the modification of Yokoyama with Koide et al., Takahashi et al. and Chung et al. requires abandonment of the primary teaching of Yokoyama, such as modification can not be obvious. In addition, the motivations for making such a modification as suggested by the Examiner are not contemplated or suggested by the prior art, but in fact, are obtained from Appellant's disclosure.

#### Claim 15

Claim 15 stands rejected under 35 U.S.C. 103(a), as being unpatentable over Ikeda et al. in view of Koide et al. and Chung et al. Claim 15 recites among other limitations "a camera head . . . including: . . . at least one digital serial driver."

The Examiner has submitted that Ikeda et al. fails to "teach that the camera head includes an A/D converter in the camera head 100, instead the image signal is converted when it reaches the CCU 140 by A/D 151" but that "Koide et al. teaches a video imaging system . . . that converts the video signal from analog to digital before transmitting it from the camera head 11 to the camera control unit 12" and that "it would have been obvious . . . to have moved A/D 151 from the CCU 140 to the camera head 100 as the video signal would be converted to a digital signal before being transmitted and this would reduce the effects of noise on the image signal as digital signals are more resistant to noise than analog signals." (Official Action 5/3/07, pp. 9-10)

Ikeda et al. is directed toward a video system such as is used for teleconferences, where a camera head is positioned to rotate or pan from person to person. (See, Col. 2, Ins. 30-48) Ikeda et al. teaches that an "object of the present invention is to im-

prove the angular speed of the pan head by reducing the weight of the video camera which is one of the heavy elements on the upper portion of the pan head.” (Col. 3, Ins. 59-62; See, Col. 3, Ins. 21-27, “In order to improve the angular speed of the pan head, there are considered to . . . Reduce the weight of the upper portion of the pan head.”) The camera of Ikeda et al. is limited to including the absolute minimum of components listed as: “image forming means”, “image sensing means” and “control means.” (Col. 3, ln. 65 – Col. 4, ln. 2.) To accomplish the stated object of the invention, Ikeda et al. teaches minimal signal processing in the camera “reducing the weight of the video camera.” (Col. 3, Ins. 60-61.) Accordingly, while the Examiner has submitted that it would be obvious to move a portion of the signal processing equipment from the CCU to the camera per claim 1, this works directly contrary to the teachings of Ikeda et al. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984) (if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.)

The Examiner further submits that neither Ikeda et al. nor Koide et al. teach “using digital serial drivers and receivers to transmit data from a camera head to a camera control unit” but that “Chung et al. teaches an imager utilizing at least one digital serial driver 54 and one digital serial receiver 56.” (Official Action 5/3/07, p. 10) The Examiner concludes that “it would have been obvious . . . to have used the digital serial driver taught by Chung et al. to transmit signals in the system taught by Ikeda et al. in view of Koide et al. and as this is a low power system that allows for the use of differential signals that are resistant to EMI noise.” *Id.* In response to Appellant’s arguments that the Examiner is seeking to add more and more equipment to the camera head in contravention to the objects of Ikeda et al., the Examiner submitted that “Ikeda states as a goal is not minimizing the weight of the camera head but ‘reducing the weight of the video camera which is one of the heavy elements on the upper portion of the pan head.’ The Examiner does not read this as minimizing the weight of the camera head but instead

removing the heavier components such as the main image processor, memory, etc.” (Official Action 5/3/07, p. 2) Appellant respectfully submits that increasing the weight of the camera head by adding processing circuitry (converter circuit and digital driver circuit and associated increased power requirements) directly works against the stated goal of “reducing the weight of the video camera.”

Accordingly, Appellant submits that modification of Ikeda et al. in view of Koide et al. (to include the converter circuitry) and Chung et al. (to include the digital serial driver circuitry) can not be obvious as it works directly opposite to the stated objects of the invention in Ikeda et al.

#### Claim 34

Claim 34 stands rejected under 35 U.S.C. 103(a), as being unpatentable over Koide et al. in view of Takahashi et al. and Official Notice (See, Official Action 5/3/07, pp. 17-18). Claim 34 requires among other limitations “a camera head, connected to said cable and an endoscope, for providing the stream of digital video data, said camera head including: . . . a serializer, for serializing the stream of digital video data for continuous transmission over said cable.”

Koide et al. is directed toward a system that allows for the downloading of digital pictures to a computer but that “the rate at which a computer can receive digital data through connectors differs from computer to computer” and that “if the rate to read charges from a CCD (i.e., image sensing rate) is set to a fixed value” then there is a chance that “the computer 53 may not be able to receive all the image data from the image sensing unit 51.” (Col. 1, ln. 59 – Col. 2, ln. 2) Accordingly, Koide et al. teaches a system that is “capable of sensing an image at the highest possible rate that a computer can receive image data from an image sensing unit without any loss of the data.” (Col. 6, lns. 3-5.) To accomplish this object, Koide et al. teaches “FIFO status flag 108 kept in the control unit 107 represents an amount of image signals stored in the FIFO memory 105, and it is updated as an image signal is inputted or outputted to/from the

FIFO memory 105.” (Col. 10, Ins. 1-4.) Koide et al. therefore, stores the images in FIFO memory and adjusts the rate at which images are transferred to the computer depending on the FIFO status flag (e.g. mostly empty, half full, mostly full, etc.) So this system, in an effort to not lose any data what-so-ever, includes a FIFO queuing system that stores digital data and transfers it to the computer at a rate that the computer can handle. However, it should be noted that claim 34 is directed toward a “camera head, connected to . . . an endoscope . . . providing the stream of digital video data.”

The Examiner has submitted that “the Examiner takes Official Notice that it is old and well known for endoscopes to be camera heads attached by means of a cable to a camera control unit and therefore it would have been obvious . . . to have used the system described in Koide et al. for use in an endoscope as this would allow for an endoscope with the advantages of the system of Koide et al. such as passing images to the control unit at a maximum frame rate.” (Official Action 5/3/07, p. 18).

During a surgical procedure, an endoscope is picking up an image of the area being operated on and relays this image data to a camera, which converts the image to a digital video stream that is transmitted to a camera control unit for display to the physician. While the Examiner makes a blanket statement that it would be obvious to modify Koide et al. to function in this manner, the system taught in Koide et al. would simply not be usable if coupled to an endoscope for a surgical procedure because the crux of the invention is to queue digital images and match the speed at which the computer can accept them. While this approach may function fine for transmission of digital images from a standard digital camera one may buy at the store to a personal computer, it will not function properly if coupled to an endoscope as a physician must be provided with a continuous video stream, not a delayed or discontinuous feed. Any delay or discontinuity in a continuous live feed could be disastrous for the patient.

It is well settled that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion

or motivation to make the proposed modification. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984). In the present case, Applicant respectfully submits that Koide et al. teaches use of a system that adjusts data transfer rates to computer "without any loss of the data" at which point the data is queued for later transmission. (emphasis added) This system is simply not usable with an endoscope to transmit a continuous video stream without abandoning the queuing system; however, this would abandon the very heart of the invention of Koide et al. working contrary to stated objects of the invention. Accordingly, such a modification cannot be obvious.

### **Conclusion**

For the foregoing reasons, Applicant respectfully submits that the claimed invention embodied in each of claims 1-4, 8-11, 13-20, 23-26 and 28-41 is patentable over the cited prior art. As such, Applicant respectfully requests that the rejections of each of claims 11-4, 8-11, 13-20, 23-26 and 28-41 be reversed and the Examiner be directed to issue a Notice of Allowance allowing each of claims 1-4, 8-11, 13-20, 23-26 and 28-41.

Respectfully submitted,

June 7, 2007

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**Claims Appendix  
to Appeal Brief Under 37 CFR §41.37  
Serial No. 10/033,316**

1. (previously presented) A video imaging system comprising:
  - a camera control unit processing a continuous stream of digital video data;
  - a cable, connected to said camera control unit, for transmitting the stream of digital video data to said camera control unit; and
  - a camera head, connected to said cable, for providing the stream of digital video data, said camera head including:
    - an imager, for generating an analog stream of video data;
    - a timing generator, generating a timing signal particular to said camera head, the timing signal actuating said imager and sent to said camera control unit;
    - a converter, for converting the analog stream of video data into the stream of digital video data; and
    - a serializer, for serializing the stream of digital video data for transmission over said cable;
    - at least one digital serial driver;
    - said camera control unit having at least one digital serial receiver and is controlled based at least in part upon said timing signal particular to said camera head.
2. (original) The video imaging system according to claim 1 wherein said camera head further comprises a multiplexer, for generating a multiplexed signal, which includes the digital image signal and control signals.
3. (original) The video imaging system according to claim 1 wherein said camera head further comprises a processor.

4. (original) The video imaging system according to claim 3 wherein said camera head further comprises a memory device, accessible by said processor, containing camera head information.

5.-7. (cancelled)

8. (original) The video imaging system according to claim 1 wherein said camera head utilizes at least one digital serial receiver.

9. (previously presented) Said camera head according to claim 1 wherein the at least one digital serial driver utilizes Low-Voltage Differential Signals.

10. (original) Said camera head according to claim 8 wherein the at least one digital serial receiver utilizes Low-Voltage Differential Signals.

11. (original) The video imaging system according to claim 1 wherein said camera control unit utilizes at least one digital serial driver.

12. (cancelled)

13. (original) Said camera control unit according to claim 11 wherein the at least one digital serial driver utilizes Low-Voltage Differential Signals.

14. (previously presented) Said camera control unit according to claim 1 wherein the at least one digital serial receiver utilizes Low-Voltage Differential Signals.

15. (previously presented) A video imaging system comprising:  
a camera control unit processing a continuous stream of digital video data;

a cable, connected to said camera control unit, for transmitting the stream of digital video data to said camera control unit; and

a camera head, connected to said cable, for providing the stream of digital video data, said camera head including:

an imager, for generating the stream of digital video data; and

a timing generator, generating a timing signal particular to said camera head, the timing signal actuating said imager and sent to said camera control unit;

at least one digital serial driver;

said camera control unit having at least one digital serial receiver and is controlled based at least in part upon said timing signal particular to said camera head;

wherein a plurality of camera heads, each with differing timing signals, are attachable to and controlled by said camera control unit.

16. (original) The video imaging system according to claim 15 wherein said camera head produces analog image data, said camera head further comprising a converter, for converting an analog image signal to a digital image signal.

17. (original) The video imaging system according to claim 15 wherein said camera head further comprises a multiplexer, for generating a multiplexed signal, which includes the image signal and control signals.

18. (original) The video imaging system according to claim 15 wherein said camera head further comprises a serializer, for serializing the image signal.

19. (original) The video imaging system according to claim 15 wherein said camera head further comprises a processor.

20. (original) The video imaging system according to claim 19 wherein said camera head further comprises a memory device, accessible by said processor, containing camera head information.

21.-22. (cancelled)

23. (previously presented) The video imaging system according to claim 15 wherein said at least one digital serial driver utilizes Low-Voltage Differential Signals.

24. (previously presented) The video imaging system according to claim 15 wherein said at least one digital serial receiver utilizes Low-Voltage Differential Signals.

25. (previously presented) A video imaging system comprising:  
a camera control unit processing a continuous stream of digital video data;  
a cable, connected to said camera control unit, for transmitting the stream of digital video data to said camera control unit; and  
a camera head, connected to said cable, for providing the stream of digital video data, said camera head including:  
an imager, for generating an analog stream of video data;  
a converter, for converting the analog stream of video data into the stream of digital video data; and  
a serializer, for serializing the stream of digital video data.

26. (original) The video imaging system according to claim 25 wherein said camera head further comprises a multiplexer, for generating a multiplexed signal, which includes the digital image signal and control signals.

27. (cancelled)

28. (original) The video imaging system according to claim 25 wherein said camera head further comprises a processor.
29. (original) The video imaging system according to claim 28 wherein said camera head further comprises a memory device, accessible by said processor, containing camera head information.
30. (original) The video imaging system according to claim 25 wherein an inputted data formats the camera control unit.
31. (original) The video imaging system according to claim 30 wherein the inputted data comes from the camera head.
32. (original) The video imaging system according to claim 25 wherein said camera head utilizes at least one digital serial driver utilizing Low-Voltage Differential Signals.
33. (original) The video imaging system according to claim 25 wherein said camera control unit utilizes at least one digital serial receiver utilizing Low-Voltage Differential Signals.
34. (previously presented) A video imaging system comprising:  
a camera control unit processing a continuous stream of digital video data;  
a cable, connected to said camera control unit, for transmitting the stream of digital video data to said camera control unit; and  
a camera head, connected to said cable and an endoscope, for providing the stream of digital video data, said camera head including:  
an imager, including an analog to digital converter for generating the stream of digital video data; and

a serializer, for serializing the stream of digital video data for continuous transmission over said cable.

35. (original) The video imaging system according to claim 34 wherein said camera head further comprises a multiplexer, for generating a multiplexed signal, which includes the image signal and control signals.

36. (original) The video imaging system according to claim 34 wherein said camera head further comprises a processor.

37. (original) The video imaging system according to claim 36 wherein said camera head further comprises a memory device, accessible by said processor, containing camera head information.

38. (original) The video imaging system according to claim 34 wherein an inputted data formats the camera control unit.

39. (original) The video imaging system according to claim 38 wherein the inputted data comes from the camera head.

40. (original) The video imaging system according to claim 34 wherein said camera head utilizes at least one digital serial driver utilizing Low-Voltage Differential Signals.

41. (original) The video imaging system according to claim 34 wherein said camera control unit utilizes at least one digital serial receiver utilizing Low-Voltage Differential Signals.

42.-48. (cancelled)

**Evidence Appendix  
to Appeal Brief Under 37 CFR §41.37  
Serial No. 10/033,316**

No evidence of any kind, including evidence submitted under 37 CFR 1.130, 1.131 or 1.132, has been entered by the Examiner and relied upon by Appellant in the appeal.

**Related Proceedings Appendix  
to Appeal Brief Under 37 CFR §41.37  
Serial No. 10/033,316**

There are no related appeals, interferences or judicial proceedings known to Appellant, the Appellant's legal representative, or Assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.